

**In the Claims:**

This listing of claims will replace all prior versions, and listing, of claims in the application:

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1. (Canceled) Apparatus for converting an optical signal to a digital signal comprising:

- a photodiode converting an optical signal to a current;
- a transimpedance amplifier converting the photodiode current to a voltage,
- 10 a sawtooth generator producing a sawtooth wave, and
- a comparator comparing the sawtooth wave with the voltage output of the transimpedance amplifier, producing a pulse width modulated digital output.

2. (Canceled) The apparatus of Claim 1 where the sawtooth generator also includes a  
15 synchronization input.

3. (Canceled) The apparatus of Claim 1 where the transimpedance amplifier, sawtooth generator, and comparator are in a common package.

20 4. (Amended) ~~The apparatus of Claim 1 where the photodiode, transimpedance amplifier, sawtooth generator, and comparator are in a common package~~ An integrated circuit for converting an optical signal to a digital signal comprising:  
a photodiode converting an optical signal to a current,  
a transimpedance amplifier converting the photodiode current to a voltage,  
 25 a sawtooth generator producing a sawtooth wave, the sawtooth generator including a synchronization input, and  
a comparator comparing the sawtooth wave with the voltage output of the transimpedance amplifier, producing a pulse-width modulated digital output.

30 5. (Amended) The apparatus of Claim 2 ~~5~~ where the photodiode further includes an optical filter.

6. (Amended) The apparatus of Claim 5 wherein a plurality of converter units, each converter unit comprising a photodiode with an optical filter, transimpedance amplifier, and comparator, are ~~driven by a common sawtooth generator~~ synchronized to a common signal.

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7. The apparatus of Claim 6 where the plurality of converter units are driven by a sawtooth generator internal to one of the converter units.

8. The apparatus of Claim 6 where the plurality of converter units are driven by a sawtooth generator external to all of the converter units.

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9. (Canceled) The apparatus of Claim 5 wherein a plurality of converter units, each converter unit comprising a photodiode with an optical filter, transimpedance amplifier, comparator, and sawtooth generator, are synchronized.

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10. (Amended) A method of converting an optical signal to a digital signal in a single integrated circuit comprising:

filtering the optical signal,

converting the optical signal to a current,

20 converting the current representing the optical signal to a voltage representing the optical signal,

generating a sawtooth wave, and

comparing the sawtooth wave to the voltage representing the optical signal and producing a digital pulse width modulated output.

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11. The method of Claim 10 where the sawtooth wave is synchronized to an external signal.

12. (Canceled) The method of Claim 10 further including the step of filtering the optical signal.

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